at1121exam_practice EXAMPLE! DO NOT HAND IN FOR CREDIT (v5)

- If you are looking for a practice exam that you can hand in for credit:

https://chadworley.github.io/algtwo2026/u04/1121/at1121exam/at1121exam.html

Question 1

Simplify the radical expressions.

$\sqrt{45}$ $\sqrt{20}$ $\sqrt{8}$

$\sqrt{3 \cdot 3 \cdot 5}$ $\sqrt{2 \cdot 2 \cdot 5}$ $\sqrt{2 \cdot 2 \cdot 2}$

$3\sqrt{5}$ $2\sqrt{5}$ $2\sqrt{2}$

Question 2

Find all solutions to the equation below:

$$\frac{(x-4)^2+6}{3} = 14$$

First, multiply both sides by 3.

$$(x-4)^2+6 = 42$$

Then, subtract 6 from both sides.

$$(x-4)^2 = 36$$

Undo the squaring. Remember the plus-minus symbol.

$$x-4 = \pm 6$$

Add 4 to both sides.

$$x = 4 \pm 6$$

So the two solutions are $x = 10$ and $x = -2$.

Question 3

By completing the square, find both solutions to the given equation. *You must show work for full credit!*

$$x^2 + 6x = 40$$

Take the linear coefficient, 6, halve it and square the result. You should get 9. Add this to both sides of the equation to complete the square.

$$x^2 + 6x + 9 = 40 + 9$$

$$x^2 + 6x + 9 = 49$$

Factor the perfect-square trinomial.

$$(x + 3)^2 = 49$$

$$x + 3 = \pm 7$$

$$x = -3 \pm 7$$

$$x = 4 \quad \text{or} \quad x = -10$$

Question 4

A quadratic polynomial function is shown below in standard form.

$$y = 2x^2 + 20x + 44$$

Express the function in **vertex form** and identify the **location** of the vertex.

From the first two terms, factor out 2 .

$$y = 2(x^2 + 10x) + 44$$

We want a perfect square. Halve 10 and square the result to get 25 . Add and subtract that value inside the parentheses.

$$y = 2(x^2 + 10x + 25 - 25) + 44$$

Factor the perfect-square trinomial.

$$y = 2((x + 5)^2 - 25) + 44$$

Distribute the 2.

$$y = 2(x + 5)^2 - 50 + 44$$

Combine the constants to get **vertex form**:

$$y = 2(x + 5)^2 - 6$$

The vertex is at point $(-5, -6)$.